

## TRI-PARTY AGREEMENT

Change Notice Number TPA-CN- 0716	TPA CHANGE NOTICE FORM	Date: 04/19/2016
Document Number, Title, and Revision: DOE/RL-2002-28 Surveillance and Maintenance Plan for the 105-DR Reactor Safe Storage Enclosure 1212743		Date Document Last Issued: July 2004
Originator: Boyd Hathaway, DOE-RL		Phone: 376-4264
<b>Description of Change:</b> <p>The referenced surveillance and maintenance (S&amp;M) plan identifies requirements for monitoring the internal temperature and flood sensors of the safe storage enclosures (SSE) Section 2.4.2, and performance of internal inspections of the safe storage enclosures (SSE) at 5-year intervals. The plan allows for change in the inspection interval based on completed inspections (Section 2.3).</p> <p>This change notice will eliminate the internal monitoring task and alters the 105-DR inspection schedule with the next inspection scheduled for 2016 or 2017. The subsequent inspection will follow in 2025, which aligns the 105-DR inspection with other reactor inspections (105-C, 105-D, 105-F, 105-H and 105-N/109-N) and will continue every 10 years thereafter</p>		
<p>Boyd Hathaway and Ecology agree that the proposed change</p> <p>DOE Lead Regulatory Agency</p> <p>modifies an approved workplan/document and will be processed in accordance with the Tri-Party Agreement Action Plan, Section 9.0, <i>Documentation and Records</i>, and not Chapter 12.0, <i>Changes to the Agreement</i>. The following change is authorized:</p> <p>In the referenced surveillance and maintenance plan, the requirements for remote internal temperature and flood sensor monitoring is eliminated (Section 2.4.2). Following the periodic inspection in 2016 or 2017, the next surveillance inspection will take place in 2025. This aligns the 105-DR inspection with the inspections for the other SSEs. Thereafter the inspection period for all SSEs, including 105-DR, will be 10 years (Section 2.3)</p> <p><b>Note:</b> Include affected page number(s)</p> <p><b>Justification and Impacts of Change:</b>  <b>Eliminate Monitoring:</b>  HNF-59342, <i>Surveillance Report for of 105-C, 105-D, 105-F, 105-H and 105-N/109-N Safe Storage Enclosures</i> provides temperature and flood condition data for all SSEs, including 105-DR, since 2009. The data demonstrate that the interior temperature sensors accurately reflect the exterior ambient air temperature (i.e., cooler in the winter months and warmer in the summer months). Similarly, there is no indication that a flooding event has occurred: as evidenced by the fact that no flood sensors have been alarmed and no water accumulation was found on the floors during the recent interior inspections. A flooding event is not likely to occur due to the low annual rainfall and the depth to groundwater.</p> <p>The empirical data collected to date demonstrate that the interior conditions (temperature variation and no demonstrated flooding) of the SSEs are stable. Continued monitoring does not add value to the ongoing surveillance and maintenance operations.</p> <p>The sensor equipment will be de-energized and left in place, however, it will not be regularly serviced or monitored. The cellular service to each SSE will be discontinued.</p> <p>Annual exterior inspections will continue along with the periodic interior inspections to assess the structural and radiological conditions of the SSE.</p> <p><b>Revise Inspection schedule:</b>  As RL transitions areas from the River Corridor Closure to Long-Term Stewardship (LTS), DOE has determined that it is more cost efficient for all of the reactor inspections to occur during the same year.</p>		

A-6005-413 (REV 1)

DOE/RL-2002-28  
Rev. 1

# **Surveillance and Maintenance Plan for the 105-DR Reactor Safe Storage Enclosure**



United States  
Department of Energy



### 2.3 SURVEILLANCE AND MAINTENANCE

The primary activity for the 105-DR SSE is periodic facility surveillance to ensure that structural integrity and hazardous material confinement is maintained. The planned surveillance route is shown in Figures 2-1 through 2-6. Surveillance requirements are defined in BHI-FS-01, Vol. 1, *Field Support Administration*, Procedure 3.1, "Facility Surveillance." Field work instructions are defined in BHI-FS-02, Vol. 1, *Field Support Work Instructions*. The Bechtel Hanford, Inc. (BHI) Field Support group provides routine maintenance, when required. Maintenance activities are implemented in accordance with the *ERC Maintenance Implementation Plan* (BHI 2000).

*Insert A*  
The 105-DR SSE was designed to require minimal maintenance. ~~A provision for periodic surveillances of the accessible internal areas of the SSE at 5-year intervals has been included to verify facility status.~~ The surveillance frequency may be adjusted at a later time, based on actual inspection history. Nonroutine activities may include necessary repair work on installed monitoring equipment or the facility.

*Insert B*  
*> from revision page*  
Access to the original building's roofs is not part of the normal surveillance and inspection route. Prior to access to any original roof area within the SSE, requirements for fall protection evaluation and authorization must be met. The building's original roofs over the "C" and "D" elevator machinery rooms have open holes used for equipment removal, and access requires the use of fall protection (see Figure 2-6). The handrails on the upper-level floor above the "C" and "D" elevator roofs are posted stating that fall protection is required prior to access to the roofs below.

An external visual inspection of the 105-DR SSE roof (e.g., roofing, siding, and flashing) and building structure is conducted annually in accordance with BHI-FS-01, Vol. 1, Procedure 3.1. Access to the roof is not required and should be avoided unless repair is required. Visual inspection of the roof can be performed from grade because any potential degradation will be readily apparent (e.g., flashing coming loose).

The 105-DR SSE is a deactivated facility and is expected to remain under S&M until final decommissioning. Planned S&M activities will include the following areas: structural integrity, barriers and postings, radiological surveys, repair of weather-protection systems and structural components, and removal of hazardous substances. These activities are addressed in the following subsections.

Table 2-1. Partial Parts Listing.

Equipment	Location	Manufacturer	Part Number
Liquid-level switch (total of two) CVI file 0100X-SC-G0036-10-003-01	Inside SSE	OMEGA	High-temperature, NEMA-6 liquid-level switches Part No.: LVN-52
Resistance temperature detector (four)	Inside SSE	OMEGA	RTD 100Ω Part No.: PR-18-21001-6E
Resistance temperature detector converter (total of four) CVI file 0100X-SC-G0036-10-003-01	Utility room	Red Lion Controls York, Pennsylvania (717) 767-6511 (www.redlion-controls.com)	Accuracy: ±0.025% Range: -160°C to 654°C (-256°F to 1,209°F) Model: IRMA 3035
Programmable logic controller	Utility room	Sixnet	"Versa Trak" Model: VP-82-422-44P
Temperature switch (two)	Utility room	OMEGA	Model: SW 143-2B
Industrial modem	Utility room	Sixnet	Model: VT-MODEM-1US

CVI = controlled vendor information

#### 2.4.1 Electrical Power

Electrical power for the SSE facility is 120/240-volts alternating current (VAC), one-phase, and is supplied from a 13.8-kV line. From a pole-mounted 13.8 kV/120 volt/240 volt transformer, the power cables are connected to distribution panel (DP-1). DP-1 feeds a distribution panel (DP-3) located inside the SSE utility room. DP-3 provides power for lighting, power receptacles, and the instrumentation system. Backup power capability to these loads is not provided.

The 105-DR SSE has permanent lighting installed along the surveillance route located on the lower level, grade, and upper levels and stairwells. In the interest of safety, all facility personnel and visitors must carry a spare light source that will be used for egress if the lighting system should fail during entry.

The 110-VAC receptacles are located at the -9-ft level in the passage leading to the lower instrument room and tunnels. Several receptacles are located at the 0-ft level along the surveillance route and in the SSE access room. Additional receptacles are located on the 13-ft, 24-ft, 42-ft, and 80-ft levels.

#### 2.4.2 Instrumentation

*See Item c  
from revision page*

The 105-DR SSE is configured with two sets of temperature sensors (i.e., resistance temperature detectors) and a set of flooding sensors (float switch), which include the installed spares for each



sensor. Temperature sensors are located at grade-level on the west side of the reactor near the "F" elevator. Temperature sensors are also located at 80-ft 5¼-in. level near the center of the attic space. The flooding sensors are located at the west side of the -9-ft 0-in. level near the "F" elevator.

The remote sensors are controlled through a programmable logic controller (PLC) powered from DP-3. Signals are transmitted (via modem and an analog cellular phone) and monitored at the operation supervisor's workstation, which is currently located in the 1112-N Building. If an alarm is observed at the remote monitoring station, personnel will evaluate the alarm and, if required, will go to DR Reactor and take appropriate corrective actions. Due to the need for changes in the location of the remote monitoring station, the system is portable and can be relocated if required.

A loss of continuity to a resistance temperature detector will result in a loss of signal to the monitoring station. The flooding sensor is normally closed-circuit, so a loss of continuity failure will result in a flooding alarm at the monitoring station. The flooding circuit is directly wired to the PLC. The temperature-monitoring circuits operate on a 4-20 mA current loop from transmitters. The transmitters are supplied with 120 VAC for operating power. In the event of an instrument failure, monitoring for both the temperature sensors and the flooding sensor can be manually switched to previously installed spares from the SSE utility room, eliminating the need to make a special entry into the SSE. Instrument replacements will normally be accomplished during regularly scheduled surveillance periods. In addition, the redundant flooding sensors can be electrically switched from the workstation at the 1112-N Building to the back-up spare sensor.

#### **2.4.3 Ventilation**

The 105-DR SSE is a deactivated facility that is uninhabited and locked during ISS, except during S&M activities. Many of the reactor's components were removed as part of the stabilization effort for placing the facility into ISS. Remaining equipment and components that contain radiological inventory were sealed during implementation of the ISS Project. A fixative has been applied to many accessible areas in the interior of the building's interior to limit the spread of contamination. As such, no mechanical ventilation of the building is anticipated to be necessary either during normal storage or during periodic surveillance.

A provision has been made to ventilate the facility with exhaust fans for entry and/or maintenance, if required. The 105-DR SSE has been designed for up to 9,000-ft<sup>3</sup>/min exhaust for building ventilation for nonroutine maintenance. If building exhaust ventilation is required, the interior access door to the SSE shall be placed in the open position. Air is drawn into the SSE through the utility room vents. The size of these openings is sufficient to provide proper air flow even when the exterior door to the SSE utility room is closed.

A ventilation system flow diagram is provided on drawing 0100X-DD-M0012, Rev. 0. The reactor area exhaust air is drawn through flanged galvanized-steel vent openings located on the north side of the SSE. The inner rod room area can be ventilated with a portable exhaust connection in the rod room east doorway. Note: To attach the portable exhaust, the sheet metal on the inner rod room curtain wall will need to be breached at the knock-out, which is

**TPA Change Notice (TPA-CN 0716)**

**Revised language to DOE/RL-2002-28, Surveillance and Maintenance Plan for the 105-DR Reactor Safe Storage Enclosure**

**Insert A - Section 2.3 Surveillance and Maintenance (DOE/RL-2002-28 Page 2-2)**

A provision for periodic surveillance of the accessible internal areas of the SSE at 10-year intervals starting in 2025 has been included to verify facility status. Prior to starting 10- year internal surveillances in 2025, an internal surveillance will be completed in 2016 or 2017.

**Insert B as new Paragraph - Section 2.3 Surveillance and Maintenance (DOE/RL-2002-28 Page 2-2)**

The regulatory agencies, EPA and Department of Ecology, will be notified and invited to attend annual inspections and ten year surveillance inspections. To support the internal surveillances every 10 years, DOE will submit a report to Ecology and the administrative record documenting all issues and concerns, including the checklists for the past 10 year annual inspections.

**Item C - Section 2.4.2 Instrumentation (DOE/RL-2002-28 Page 2-8)**

In 2009, the analog cellular system was replaced with a digital system and continuous monitoring was converted to periodic monitoring once per month. Signals were transmitted to remote laptop computer instead of the supervisors work station located in the 1112-N building.

In 2016, the digital telephone modem that allows remote computer access to the monitoring instrumentation will be disconnected in accordance with TPA Change Notice 0716. The interior equipment including sensors and wiring will remain in place, however, the equipment will not be maintained. If required in the future, the telephone modem connection may be reestablished.